WHAT IS CLAIMED IS:

1. A medical apparatus, comprising:

a hollow cylinder defining an inner diameter, an outer diameter, and a radial thickness;

open cells removed from the hollow cylinder defining generally longitudinal members in remaining material of the cylinder; and

the generally longitudinal members defining a circumferential width, wherein the radial thickness is greater than the circumferential width.

2. The medical apparatus of claim 1, wherein each generally longitudinal member joins with adjacent generally longitudinal members to form merge sections.

3. The medical apparatus of claim 2, wherein the generally longitudinal members and merge sections form a continuous cylindrical structure.

4. The medical apparatus of claim 2, wherein each generally longitudinal member only joins with opposing adjacent members at opposing ends of the generally longitudinal member.

5. The medical apparatus of claim 2, wherein each generally longitudinal member alternately joins with alternating adjacent generally longitudinal members throughout the length of the generally longitudinal member.

6. The medical apparatus of claim 1, wherein the generally longitudinal members each comprise:

two curved sections of opposing curvature joined end-to-end.

7. The medical apparatus of claim 1, wherein the generally longitudinal members each comprise:

at least three curved sections each joined end-to-end with curved sections having opposing curvature.

8. The medical apparatus of claim 1, further comprising:

a compressed condition defining a reduced inner diameter and outer diameter, wherein the endoprosthesis is capable of compression to the compressed condition.

9. The medical apparatus of claim 1, further comprising:

an expanded condition defining an increased inner diameter and outer diameter, wherein the endoprosthesis is capable of expansion to the expanded condition.

10. The medical apparatus of claim 9, wherein the expanded condition further defines a conical shape of the endoprosthesis.

11. The medical apparatus of claim 1, wherein the circumferential width of at least one generally longitudinally extending member varies along a length thereof.

12. A single-piece cylindrical endoprosthesis comprising:

a plurality of circumferentially spaced beams each defining a longitudinal length, a forward end, a rear end, a radial thickness, and a circumferential width less than the radial thickness;

a plurality of forward merge sections formed by the front ends of two adjacent beams; and

a plurality of aft merge sections formed by the rear ends of two adjacent beams;

whereby the combination of beams, forward merge sections and aft merge sections form a continuous cylindrical structure.

13. The endoprosthesis of claim 12, further comprising:

a plurality of middle merge sections formed from the intermittent joining of adjacent beams.

14. The endoprosthesis of claim 12, wherein the beams further define at least one pair of curved sections of opposing curvature joined end-to-end.

15. The endoprosthesis of claim 14, wherein the point at which the curved sections meet defines an inflection point.

16. The endoprosthesis of claim 12, wherein the circumferential width of at least one beam is varied along its length.

17. A single piece endoprosthesis comprising:

a plurality of longitudinal beams connected in a cylindrical structure;

an expanded configuration wherein each beam is mostly curved throughout its length; and

a compressed configuration wherein each beam is nearly straight throughout its length.

18. The endoprosthesis of claim 17, wherein the beams are prevented from overlapping in the compressed configuration by having a thickness greater than their width.

19. The endoprosthesis of claim 18, wherein each beam defines a width and a thickness which is at least one and one-third times the width.

20. The endoprosthesis of claim 17, wherein the beams are continuously curved when in the expanded condition.

21. The endoprosthesis of claim 17, wherein the beams are uniformly bent throughout their length when in the expanded condition.

22. The endoprosthesis of claim 17, wherein the beams are free from stress concentrations in the expanded configuration.

23. The endoprosthesis of claim 17, wherein the expanded configuration defines a conical shape.

24. The endoprosthesis of claim 17, wherein at least one beam has a thickness that varies along its length.

25. A method of manufacturing a compressible endoprosthesis from a hollow cylindrical tube having a radial thickness, comprising the steps of:

defining a pattern for a cell comprising two sides each having at least two curves and an inflection point;

defining a pattern of the cells along the length and circumference of the cylindrical tube such that the areas between the cells are elongated and have a circumferential width substantially less than the radial thickness; and

removing the material of the cylinder within each cell.

26. The method of claim 25, wherein the pattern for the cell has an almond shape.

27. The method of claim 25, wherein the removal step includes chemically etching the material within the cells.

28. The method of claim 25, wherein the removal step includes laser cutting along the pattern.

29. The method of claim 25, wherein the removal step includes electrical discharge machining of the material within the cells.

30. The method of claim 25, wherein the defining a pattern of the cells step includes defining half-cells at each end of the tube.

31. The method of claim 25, wherein the defining a pattern of the cells step includes defining longer cells at one end of the cylinder.

32. The method of claim 25, further comprising the steps of:

stretching the cylindrical tube over a mandrel; and

annealing the cylindrical tube.

33. The method of claim 32, wherein the mandrel has a conical shape.

34. The method of claim 25, further comprising the steps of:

cutting the tube radially to form a first end of the compressible endoprosthesis; and

cutting the tube radially to form a second end of the compressible endoprosthesis.

35. The method of claim 34, wherein the first end and the second end of the compressible endoprosthesis are one-half cell apart.